

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Previously presented): A microelectronic spring structure, comprising:

a substrate;

a beam;

an elongate post component between said substrate and said beam, whereby said beam is spaced apart from and secured to said substrate, said post component comprised of a wire core coated with a structural material; and

a protruding member mounted to said substrate, and disposed under said beam;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said beam, and a deflected position wherein said protruding member contacts said beam.

Claim 2 (Original): The microelectronic spring structure of Claim 1, further comprising a tip structure for contacting a terminal of an electronic component, said tip structure mounted to and disposed above a surface of said beam opposite to said substrate.

Claim 3 (Previously presented): The microelectronic spring structure of Claim 2, wherein said tip structure is mounted to an end of said beam.

Claim 4 (Original): The microelectronic spring structure of Claim 2, wherein said tip structure is positioned above all of said beam, relative to said substrate.

Claim 5 (Original): The microelectronic spring structure of Claim 2, wherein said tip structure comprises a stand-off mounted to said beam, and a contact tip mounted to said stand-off.

Claim 6 (Canceled)

Claim 7 (Original): The microelectronic spring structure of Claim 1, wherein said beam is connected to a first terminal of an electronic component on said substrate, and said protruding member is connected to a second terminal of the electronic component on said substrate.

Claim 8 (Original): The microelectronic spring structure of Claim 1, wherein said beam is connected to a terminal of an electronic component on said substrate, and said protruding member is not connected to any electronic component.

Claim 9 (Original): The microelectronic spring structure of Claim 1, wherein said beam and said protruding member are connected to a shared terminal of an electronic component on said substrate.

Claim 10 (Original): The microelectronic spring structure of Claim 1, wherein said beam is electrically isolated from said protruding member when said microelectronic spring structure is in the undeflected position.

Claim 11 (Original): The microelectronic spring structure of Claim 1, wherein said beam is formed by a lithographic process on a sacrificial substrate.

Claim 12 (Original): The microelectronic spring structure of Claim 1, wherein said beam is formed by lithographic process on a sacrificial layer.

Claim 13 (Canceled)

Claim 14 (Previously amended): The microelectronic spring structure of Claim 1, wherein said post component comprises a column element.

Claim 15 (Previously amended): The microelectronic spring structure of Claim 1, wherein said post component comprises a group of column elements.

Claim 16 (Canceled)

Claim 17 (Original): The microelectronic spring structure of Claim 1, wherein said beam is straight and elongate.

Claim 18 (Original): The microelectronic spring structure of Claim 1, wherein said beam is contoured.

Claim 19 (Original): The microelectronic spring structure of Claim 1, wherein said protruding member comprises a wire bonded to said substrate.

Claim 20 (Original): The microelectronic spring structure of Claim 19, wherein said protruding member further comprises a structural material coated over said wire.

Claim 21 (Previously presented): The microelectronic spring structure of Claim 1, wherein said post component is disposed under a middle portion of said beam.

Claim 22 (Previously presented): The microelectronic spring structure of Claim 21, further comprising an electronic device connected to said beam and to said substrate.

Claim 23 (Original): The microelectronic spring structure of Claim 22, wherein said electronic device comprises a capacitor.

Claim 24 (Original): The microelectronic spring structure of Claim 1, wherein said protruding member comprises a substantially compressible member.

Claim 25 (Original): The microelectronic spring structure of Claim 24, wherein said protruding member comprises an elastic membrane enclosing a fluid.

Claim 26 (Original): The microelectronic spring structure of Claim 1, wherein said protruding member comprises an adjustable pressure device.

Claim 27 (Original): The microelectronic spring structure of Claim 26, wherein said protruding member comprises a rotating cam.

Claim 28-38 (Canceled)

Claim 39 (Previously presented): A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, a cantilevered portion extending from said base portion, and a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion, said beam secured to said substrate at said base portion; and

a protruding member mounted to said substrate, and disposed under said cantilevered portion of said beam, said protruding member comprising a wire core bonded to said substrate and encased in a structural material;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said beam, and a deflected position wherein said protruding member contacts said beam.

Claim 40 (Original): The microelectronic spring structure of Claim 39, wherein said beam is electrically isolated from said protruding member when said microelectronic spring structure is in the undeflected position.

Claim 41 (Original): The microelectronic spring structure of Claim 39, wherein said beam is formed by a lithographic process.

Claim 42 (Original): The microelectronic spring structure of Claim 39, further comprising a tip structure for contacting a terminal of an electronic component, said tip structure mounted to said tip portion of said beam and positioned above all of said beam relative to said substrate.

Claim 43 (Original): The microelectronic spring structure of Claim 39, wherein said protruding member is spaced apart from said tip portion, whereby said protruding member contacts said cantilevered portion of said beam at a position spaced apart from said tip portion when said microelectronic spring structure is in the deflected position.

Claim 44 (Original): The microelectronic spring structure of Claim 39, wherein said beam is straight and elongate.

Claim 45 (Original): The microelectronic spring structure of Claim 39, wherein said beam is contoured.

Claim 46 (Previously amended): The microelectronic spring structure of Claim 39, wherein said protruding member comprises a column, said column having a first end attached to said substrate, and a second end disposed under said beam above said substrate.

Claim 47 (Canceled)

Claim 48 (Previously presented): A microelectronic spring structure, comprising:

- a substrate;

- a beam, having a base portion, a cantilevered portion extending from said base portion, and a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion, said base portion secured to said substrate;

- a tip structure for contacting a terminal of an electronic component, said tip structure mounted to and disposed above a first surface of said beam opposite to said substrate;

- a protruding member extending from a second surface of said beam between said tip portion and said base portion, said second surface opposite said first surface;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein the protruding member does not contact said substrate, and a deflected position wherein said protruding member contacts said substrate and said tip structure is reverse wiped.

Claim 49 (Previously amended): The microelectronic spring structure of Claim 48, wherein said tip structure is located at a position intermediate between said base portion and said tip portion.

Claim 50 (Previously amended): The microelectronic spring structure of Claim 48, wherein said tip structure is mounted to said tip portion of said beam.

Claim 51 (Previously presented): The microelectronic spring structure of Claim 48, wherein said base portion is mounted to said substrate and said cantilevered portion thereof extends away from said substrate.

Claim 52 (Previously presented): The microelectronic spring structure of Claim 48, further comprising a post component securing said base portion to said substrate, whereby said base portion of said beam is spaced apart from and secured to said substrate.

Claim 53 (Original): The microelectronic spring structure of Claim 48, wherein said beam is connected to a first terminal of an electronic component on said substrate, and said protruding member contacts a second terminal of the electronic component on said substrate, when said microelectronic spring structure is in the deflected position.

Claim 54 (Original): The microelectronic spring structure of Claim 48, wherein said beam is connected to a terminal of an electronic component on said substrate, and said protruding member does not contact any electronic component, when said protruding member is in contact with said substrate.

Claim 55 (Original): The microelectronic spring structure of Claim 48, wherein said beam and said protruding member are connected to a shared terminal of an electronic component on said substrate, when said microelectronic spring structure is in the deflected position.

Claim 56 (Original): The microelectronic spring structure of Claim 48, wherein said beam is formed by a lithographic process on a sacrificial substrate.

Claim 57 (Original): The microelectronic spring structure of Claim 48, wherein said beam is formed by a lithographic process on a sacrificial layer.

Claim 58 (Original): The microelectronic spring structure of Claim 52, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

Claim 59 (Original): The microelectronic spring structure of Claim 52, wherein said post component comprises a group of column elements.

Claim 60 (Original): The microelectronic spring structure of Claim 59, wherein each column element of said group is comprised of a wire core coated with a structural material.

Claim 61 (Original): The microelectronic spring structure of Claim 48, wherein said beam is straight and elongate.

Claim 62 (Original): The microelectronic spring structure of Claim 48, wherein said beam is contoured.

Claim 63 (Original): The microelectronic spring structure of Claim 48, wherein said protruding member comprises a wire bonded to said beam.

Claim 64 (Previously presented): The microelectronic spring structure of Claim 63, wherein said protruding member further comprises a structural material coated over said wire.

Claim 65 (Original): The microelectronic spring structure of Claim 48, wherein said protruding member is integrally formed with said beam.

Claim 66 (Previously presented): The microelectronic spring structure of Claim 48, wherein said protruding member extends from said beam towards said tip portion and towards said substrate.

Claim 67 (Canceled)

Claim 68 (Previously presented): A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, a cantilevered portion extending from said base portion, and a separately extending portion extending from said base portion in a direction different from said cantilever portion;

a post component mounted to said substrate and to said base portion of said beam, whereby said base portion of said beam is spaced apart from and secured to said substrate; and

an electronic device connected to said separately extending portion of said beam and to said substrate;

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position wherein said cantilevered portion of said beam is substantially free of strain, and a deflected position wherein said cantilevered portion is deflected towards said substrate under the influence of an externally applied force.

Claim 69 (Original): The microelectronic spring structure of Claim 68, wherein said beam further comprises a tip portion adjoining said cantilevered portion at an end thereof opposite to said base portion.

Claim 70 (Original): The microelectronic spring structure of Claim 69, further comprising a tip structure for contacting an electronic component, said tip structure mounted to said tip portion of said beam.

Claim 71 (Original): The microelectronic spring structure of Claim 68, wherein said electronic device comprises a capacitor.

Claim 72 (Original): The microelectronic spring structure of Claim 68, wherein said beam is formed by a lithographic process on a sacrificial substrate.

Claim 73 (Original): The microelectronic spring structure of Claim 68, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

Claim 74 (Original): The microelectronic spring structure of Claim 73, wherein said post component comprises a group of column elements.

Claim 75 (Original): The microelectronic spring structure of Claim 74, wherein each column element of said group is comprised of a wire core coated with a structural material.

Claim 76 (Original): The microelectronic spring structure of Claim 68, wherein said beam is straight and elongate.

Claim 77 (Original): The microelectronic spring structure of Claim 68, wherein said beam is contoured.

Claim 78 (Currently amended): A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion; and

an adjustable device disposed under said beam providing a stop for said beam that is adjustable between at least two different positions,

wherein said microelectronic spring structure is reversibly deflectable between an undeflected position in which said beam is spaced from said adjustable device and a deflected position in which said beam is deflected into contact with said adjustable device.

Claims 79-82 (Canceled)

Claim 83 (Previously presented): The microelectronic spring structure of Claim 78, wherein said adjustable device comprises an elastic membrane enclosing a fluid.

Claims 84 and 85 (Canceled)

Claim 86 (Currently amended): ~~The microelectronic spring structure of Claim 78, further comprising~~ A microelectronic spring structure, comprising:

a substrate;

a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion;

an adjustable device disposed under said beam providing a stop for said beam that is adjustable between at least two different positions; and

a post component securing said substrate to said base portion of said beam,
whereby said base portion of said beam is spaced apart from and secured to said substrate.

Claim 87 (Original): The microelectronic spring structure of Claim 78, wherein said beam is formed by a lithographic process on a sacrificial substrate.

Claim 88 (Previously amended): The microelectronic spring structure of Claim 86, wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

Claim 89 (Original): The microelectronic spring structure of Claim 86, wherein said post component comprises a group of column elements.

Claims 90-94 (Canceled)

Claim 95 (Currently amended): A microelectronic spring structure, comprising:

a substrate;
a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion; ~~and~~
~~a compressible protruding member~~ pressure means for reducing a bending stress on said beam, said member means disposed under said beam; and
means for adjusting a pressure of said pressure means.

Claim 96 (Currently amended): The microelectronic spring structure of Claim 95, wherein a compressibility of said ~~compressible protruding member~~ pressure means is adjustable.

Claim 97 (Currently amended): The microelectronic spring structure of Claim 95, wherein said ~~compressible protruding member~~ pressure means comprises an elastic membrane enclosing a fluid.

Claim 98 (Previously presented): The microelectronic spring structure of Claim 95, further comprising a post component securing said base portion to said substrate, whereby said base portion is spaced apart from and secured to said substrate.

Claim 99 (Previously presented): The microelectronic spring structure of Claim 95, wherein said beam is formed by a lithographic process on a sacrificial substrate.

Claim 100 (Currently amended): ~~The microelectronic spring structure of Claim 95, A~~
microelectronic spring structure, comprising:

a substrate;
a beam, having a base portion, and a cantilevered portion extending from said base portion, said beam secured to said substrate at said base portion; and
a compressible protruding member disposed under said beam,
wherein said post component comprises a column element, said column element comprised of a wire core coated with a structural material.

Claim 101 (Previously presented): The microelectronic spring structure of Claim 95, wherein said post component comprises a group of column elements.

Claim 102 (Previously presented): The microelectronic spring structure of Claim 39, further comprising a post component securing said base portion to said substrate, whereby said base portion is spaced apart from and secured to said substrate.

Claim 103 (Previously presented): The microelectronic spring structure of Claim 39, wherein said cantilevered portion of said beam extends away from said substrate.